MassDEP Fact Sheet

PFOS in Drinking Water: Questions and Answers

What is PFOS?

PFOS, or perfluorooctane sulfonate, is a stable, manmade chemical with unique properties to repel oil, grease and water. PFOS is used widely in consumer products as protective surface coating on carpet, furniture, clothing, cookware and food packaging. PFOS may also be found in cosmetics, cleaning products, and pesticides. It is present in certain fire-fighting foams which are effective for extinguishing fires involving highly flammable liquid fuels such as gasoline and diesel. PFOS has been largely phased out in the US and Europe but it remains in products manufactured before the ban.

How does PFOS get into water?

Disposal of consumer and commercial products that contain PFOS can lead to its presence in landfill leachate that can impact water. Also due to its presence in products, it can leach into groundwater from septic systems or be released into the environment in treated wastewater. It may also reach water from the use of specific types of fire-fighting foams. Once released into the environment, it dissolves into the groundwater or surface water where it can persist for a long time.

How is PFOS discovered in drinking water?

PFOS has been found in groundwater supplies across the US as a result of recent testing required by the United States Environmental Protection Agency (US EPA) of US public drinking water supplies. For more information, please see:
http://water.epa.gov/lawsregs/sdwa/ucmr/ucmr3/basicinformation.cfm

Sometimes it is found from the testing of private or public drinking water supplies close to potential PFOS sources.

How might I be exposed by drinking water?

People can be exposed to PFOS by drinking contaminated water or consuming foods and beverages (e.g., coffee, baby formula, etc.) made with contaminated water. Exposures from showering and bathing are low, because PFOS is poorly absorbed through the skin and does not volatilize from water into the air where it could be inhaled during showering. Children may be exposed by swallowing some water during bathing, but this would be a very low exposure.

What are the health effects of PFOS?

In laboratory studies, animals exposed to levels of PFOS far above the US EPA's Provisional Health Advisories exhibited low birth weight and slow growth, increased liver weights, and effects on thyroid hormones. Some studies have suggested that PFOS may cause certain types of cancer but the evidence is limited. The levels at which PFOS may cause health effects due to long-term exposures are a matter of ongoing research.

What is the health guideline for PFOS in drinking water supplies?

In 2009, the USEPA set a Provisional Health Advisory[1] of 0.2 ug/L (micrograms per liter, sometimes described as parts per billion, or ppb) of PFOS in drinking water. The Provisional Health Advisory is set to protect public health from short-term exposures and is used to determine when action should be taken to reduce exposures to the contaminant when the advisory limit is exceeded.

What is the basis of the US EPA Provisional Health Advisory for PFOS?

The US EPA Provisional Health Advisory is set to protect public health and focuses on children's exposures. It assumes that a child consumes 1 liter (approximately four 8-oz glasses) per day of water containing PFOS. These exposures were used to set the Health Advisory for PFOS in drinking water because children consume more water per body weight than adults, so their relative exposures may be higher than adults.

Can I drink, cook and make ice and infant formula with water that contains PFOS?

If your water is at or below the provisional health advisory, you can use it to drink, cook, and make ice and infant formula. If it is above, the answer to these questions will depend upon the level of PFOS in the water and must be considered on a case-by-case basis. If the level exceeds the US EPA Provisional Health Advisory, as a precaution, you may choose to use bottled water (see more on this below) or water from another clean source for these uses, in particular to make infant formula or other infant foods or beverages. If you have concerns about your health status, you should talk to your family doctor and/or an occupational doctor familiar with chemical exposures (see http://www.aoec.org/content/directory_MA.htm). When you meet with them, provide a copy of your PFOS sampling results and this factsheet.

Should I be concerned about breastfeeding my child if PFOS is in my drinking water?

Studies have shown that PFOS is present in most breast milk and can be an exposure route for nursing infants. For most people, the levels are very low and since the benefits of breast-

[1] Provisional Health Advisory values are developed to provide information in response to an urgent or rapidly developing situation. They reflect reasonable, health-based hazard concentrations above which action should be taken to reduce exposure to unregulated contaminants in drinking water.

feeding are well-established, infants should continue to be breast-fed. If you have concerns about breastfeeding, you should talk to your family doctor and/or an occupational doctor familiar with chemical exposures (see http://www.aoec.org/content/directory_MA.htm). When you meet with them, provide a copy of your PFOS sampling results and this factsheet.

Can I safely use the water to brush my teeth, rinse food, and for other household uses?

Yes. You are unlikely to consume enough PFOS to be of concern when brushing teeth. The use of water containing PFOS for dish washing and rinsing of fruits and vegetables will not result in significant exposures especially if they are dried to remove excess water

How will I know if my drinking water has PFOS levels above the guideline?

Public Water Systems serving more than 10,000 people have been monitoring for PFOS as part of the USEPA's Unregulated Contaminant Monitoring Rule 3 (UCMR 3). The UCMR 3 requires participating Community Public Water Systems to include the average and range of contaminant detections in their annual Consumer Confidence Report which is delivered to all their customers. In addition, some smaller Public Water Systems were required to participate in this monitoring. All UCMR 3 water samples will have been collected between January 2013 and December 2015.

MassDEP has been tracking these results and is working with communities that had PFOS in drinking water above the guideline. In addition, both the USEPA and state require Public Water Systems to provide special notices for certain situations, including the availability of unregulated contaminant monitoring data.

Does bottled water contain PFOS?

Consumers should contact the bottler with specific questions about the possible PFOS content of their water.

Where can I get additional information?

General Information: Contact MassDEP's Office of Research and Standards: 617-292-5998

References:

US Environmental Protection Agency's *Provisional Health Advisories for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS)* is available at:
http://water.epa.gov/action/advisories/drinking/upload/2009_01_15_criteria_drinking_pha-PFOA_PFOS.pdf

US Environmental Protection Agency. *Health Effects Document for Perfluorooctane Sulfonate (PFOS).* February, 2014. Available at: http://peerreview.versar.com/epa/pfoa/pdf/Health-Effects-Document-for-Perfluorooctane-Sulfonate-(PFOS).pdf